

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

ATTORNEY DOCKET NUMBER: 200308070-3

IN RE APPLICATION OF: U.S. Patent No. 7,006,698

USPTO CONFIRMATION CODE: 5879

APPLICATION NO.: 10/721,947

FILED: Nov. 25, 2003

EXAMINER: Wenpeng Chen

GROUP ART UNIT: 2625

FOR: METHOD AND APPARATUS FOR COMPRESSING A VIDEO IMAGE

37 CFR 1.322 & 37 CFR 1.323 REQUEST FOR CERTIFICATE OF CORRECTION

HONORABLE COMMISSIONER OF PATENTS & TRADEMARKS

Sir:

The following is a request for a certificate of correction in Serial Number 10/721,947, now Patent Number 7,006,698.

A certificate of correction under 35 USC 254 is respectfully requested in the above-identified patent.

☐ All errors were the fault of the USPTO, no fee required. In the event that a further fee is required, please charge the amount to Deposit Account No. 082025.

☐ All errors were the fault of the applicant and, accordingly, please charge \$100.00 to our Deposit Account No. 082025. In the event that a further fee is required, please charge the amount to the same Deposit Account.

☒ The errors were the fault of both the applicant and USPTO and, accordingly, please charge \$100.00 to our Deposit Account No. 082025. In the event that a further fee is required, please charge the amount to the same Deposit Account.

The exact locations where the errors appear in the patent and patent application are as follows:

On the face page, in field (75), in "Inventors", in column 1, lines 1-8, delete "Matthew James Adiletta, Worcester, MA (US); King-Wai Chow, Marlboro, MA (US); Samuel Williams Ho, Marlborough, MA (US); Robert Clint Rose, Hudson, MA (US); William Ralph Wheeler, Southborough, MA (US); Subramania Iyer Sudharsanan, San Jose, CZ (US)" and insert - - King-Wai Chow, Marlborough, MA (US); Robert Clint Rose, Hudson, MA (US) - -, therefor.  
(Amendment after Notice of Allowance filed Jul. 26, 2005, page 5, lines 9-10)

On the face page, in field (60), under "Related U.S. Application Data", in column 1, line 4, delete "6,101,275" and insert - - 6,101,276 - -, therefor.  
(Examiner's amendment dated Jun. 27, 2005, page 2, line 11)

On the face page, in field (57), under "Abstract", in column 2, lines 1-14, delete "An apparatus and method for performing two-pass real time video compression is provided. Tactical decisions such as encoding and quantification values are determined in software, whereas functional execution steps are performed in hardware. By appropriately apportioning the tasks between software and hardware, the benefits of each type of processing are exploited, while minimizing both hardware complexity and data transfer requirements. One key concept that allows the compression unit to operate in real time is that the architecture and pipe lining both allow for B frames to be executed out of order. By buffering B frames, two-pass motion estimation techniques can be performed to tailor bit usage to the requirements of the frame, and therefore provide a more appealing output image." and insert - - Method and apparatus for compressing video images are provided. A difference value from a current image and a prior image is calculated and compared against a variable adaptive threshold. If the calculated difference value is less than the variable adaptive threshold, the difference value is subtracted from the variable adaptive threshold to produce a new variable adaptive threshold level, and the video signal is deleted. Otherwise the variable adaptive threshold is reset to a predetermined beginning value, and the video signal is sent to an encoding and transmitting module. - -, therefor.  
(Amendment to Abstract filed Dec. 13, 2004, page 9, lines 5-10)

In column 1, line 25, delete "VWR," and insert - - VCR, - -, therefor.  
(Specification filed on Nov. 25, 2003, page 1, line 14)

In column 2, line 22, delete "(DC)," and insert - - (MC), - -, therefor.  
(Specification filed on Nov. 25, 2003, page 3, line 5)

In column 2, line 24, delete "(DUCT)" and insert - - (DCT) - -, therefor.  
(Specification filed on Nov. 25, 2003, page 3, line 7)

In column 2, line 42, delete "BC2," and insert - - B2, - -, therefor.  
(Specification filed on Nov. 25, 2003, page 3, line 21)

In column 2, line 64, delete "BC2" and insert - - B2 - -, therefor.  
(Specification filed on Nov. 25, 2003, page 4, line 5)

In column 3, line 51, delete "pipeline" and insert - - pipelined - -, therefor.  
(Specification filed on Nov. 25, 2003, page 5, line 15)

In column 4, line 47, delete "quantification" and insert - - quantization - -, therefor.  
(Specification filed on Nov. 25, 2003, page 7, line 2)

In column 5, line 2, delete "VCD" and insert - - VCDU - -, therefor.  
(Specification filed on Nov. 25, 2003, page 7, line 19)

In column 5, line 28, delete "DUCT" and insert - - DCT - -, therefor.  
(Specification filed on Nov. 25, 2003, page 8, line 8)

In column 5, line 36, delete "quantification" and insert - - quantization - -, therefor.  
(Specification filed on Nov. 25, 2003, page 8, line 15)

In column 5, line 38, delete "quantification" and insert - - quantization - -, therefor.  
(Specification filed on Nov. 25, 2003, page 8, line 17)

In column 7, line 44, delete "P4 B3" and insert - - P4 B5 - -, therefor.  
(Specification filed on Nov. 25, 2003, page 11, line 25)

In column 13, line 35, delete "MC" and insert - - DC - -, therefor.  
(Specification filed on Nov. 25, 2003, page 21, line 5)

In column 13, line 37, delete "MC" and insert - - DC - -, therefor.  
(Specification filed on Nov. 25, 2003, page 21, line 6)

In column 13, line 43, delete "Intra\_MC" and insert - - Intra\_DC - -, therefor.  
(Specification filed on Nov. 25, 2003, page 21, line 10)

In column 13, line 61, delete "MC" and insert - - DC - -, therefor.  
(Specification filed on Nov. 25, 2003, page 21, line 19)

In column 14, line 12, delete "MC" and insert - - DC - -, therefor.  
(Specification filed on Nov. 25, 2003, page 22, line 5, after "The Backward")

In column 14, line 13, delete "MC" and insert - - DC - -, therefor.  
(Specification filed on Nov. 25, 2003, page 22, line 5, before "components")

In column 14, line 43, delete "MC" and insert - - DC - -, therefor.  
(Specification filed on Nov. 25, 2003, page 22, line 23)

In column 16, line 49, delete "quantification" and insert - - quantization - -, therefor.  
(Specification filed on Nov. 25, 2003, page 26, line 9)

In column 16, line 51, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 26, line 10)

In column 16, line 52, delete "DUCT" and insert - - DCT - -, therefor.

(Specification filed on Nov. 25, 2003, page 26, line 11)

In column 16, line 53, delete "DUCT" and insert - - DCT - -, therefor.

(Specification filed on Nov. 25, 2003, page 26, line 12)

In column 20, line 16, delete "S" and insert - -  $S_1$  - -, therefor.

(Specification filed on Nov. 25, 2003, page 31, line 25)

In column 22, line 33, in equation 7, delete " $d = |v_y(i) - v_y(0)| + |v_x(i) - v_x(0)|$ ", and insert - -  $d = |v_y(i) - v_y(0)| + |v_x(i) - v_x(0)|$  - -, therefor.

(Specification filed on Nov. 25, 2003, page 35, line 13)

In column 23, line 47, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 37, line 11)

In column 23, lines 49-50, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 37, line 13)

In column 23, line 62, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 37, line 21)

In column 24, line 3, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 37, line 28)

In column 24, line 4, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 37, line 29)

In column 24, line 10, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 38, line 2)

In column 24, line 30, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 38, line 15)

In column 24, lines 32-33, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 38, line 17)

In column 24, line 36, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 38, line 19)

In column 24, line 37, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 38, line 20)

In column 24, line 48, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 39, line 1)

In column 24, line 49, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 39, line 2)

In column 24, line 63, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 39, line 9)

In column 24, line 65, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 39, line 11)

In column 25, line 4, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 39, line 15)

In column 25, line 17, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 39, line 25)

In column 25, line 24, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 40, line 1)

In column 25, line 27, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 40, line 4)

In column 25, lines 59-60, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 40, line 28)

In column 25, lines 62-63, delete "quantification" and insert -- quantization --, therefor.

(Specification filed on Nov. 25, 2003, page 40, line 30)

In column 26, line 2, delete "quantification" and insert -- quantization --, therefor.

(Specification filed on Nov. 25, 2003, page 41, line 5)

In column 26, line 31, delete "quantification" and insert -- quantization --, therefor.

(Specification filed on Nov. 25, 2003, page 41, line 26)

In column 26, lines 45-46, delete "quantification" and insert -- quantization --, therefor.

(Specification filed on Nov. 25, 2003, page 42, line 8)

In column 26, line 53, delete "quantification" and insert -- quantization --, therefor.

(Specification filed on Nov. 25, 2003, page 42, line 14)

In column 26, line 60, delete "quantification" and insert -- quantization --, therefor.

(Specification filed on Nov. 25, 2003, page 42, line 18)

In column 26, line 63, delete "quantification" and insert -- quantization --, therefor.

(Specification filed on Nov. 25, 2003, page 42, line 21)

In column 27, line 39, in equation 9A, delete " $2(y+1)u_{II}$ " and insert --  $2(y+1)v_{II}$  --, therefor.

(Specification filed on Nov. 25, 2003, page 43, line 19)

In column 27, line 45, in equation 9B, delete " $2(v+1)v_{II}$ " and insert --  $2(y+1)v_{II}$  --, therefor.

(Specification filed on Nov. 25, 2003, page 43, line 21)

In column 27, line 52, delete "IMCT" and insert -- IDCT --, therefor.

(Specification filed on Nov. 25, 2003, page 43, line 24)

In column 27, line 62, delete "MC" and insert -- DC --, therefor.

(Specification filed on Nov. 25, 2003, page 44, line 7)

In column 27, line 64, delete "quantification" and insert -- quantization --, therefor.

(Specification filed on Nov. 25, 2003, page 44, line 7)

In column 27, line 64, delete "Quantification" and insert - - Quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 44, line 8)

In column 28, line 3, delete "Quantification" and insert - - Quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 44, line 12)

In column 28, line 19, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 44, line 24)

In column 28, line 46, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 45, line 12)

In column 29, line 12, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 46, line 7)

In column 38, line 46, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 61, line 19)

In column 38, line 51, delete "IMCT" and insert - - IDCT - -, therefor.

(Specification filed on Nov. 25, 2003, page 61, line 22)

In column 38, line 52, delete "Quantification" and insert - - Quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 61, line 23)

In column 38, line 64, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 62, line 2)

In column 39, line 8, delete "pipeline" and insert - - pipelined - -, therefor.

(Specification filed on Nov. 25, 2003, page 62, line 9)

In column 39, line 21, delete "pipeline" and insert - - pipelined - -, therefor.

(Specification filed on Nov. 25, 2003, page 62, line 18)

In column 39, line 64, delete "Pa." and insert - - P4. - -, therefor.

(Specification filed on Nov. 25, 2003, page 63, line 22)

In column 43, line 32, delete "T11," and insert - - T10, - -, therefor.

(Specification filed on Nov. 25, 2003, page 69, line 13)

In column 44, line 29, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 71, line 1)

In column 45, line 16, delete "Quantification" and insert - - Quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 72, line 11)

In column 45, line 20, delete "MCT" and insert - - DCT - -, therefor.

(Specification filed on Nov. 25, 2003, page 72, line 13)

In column 45, line 26, delete "MCT" and insert - - DCT - -, therefor.

(Specification filed on Nov. 25, 2003, page 72, line 18)

In column 45, line 28, delete "Quantification" and insert - - Quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 72, line 19)

In column 45, line 29, delete "Quantification" and insert - - Quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 72, line 20)

In column 47, line 35, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 75, line 31)

In column 47, line 37, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 76, line 2)

In column 50, lines 61-62, delete "Quantification" and insert - - Quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 81, line 8)

In column 50, line 64, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 81, line 10)

In column 50, line 65, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 81, line 11)

In column 50, line 65, delete "Quantification" and insert - - Quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 81, line 11)



In column 51, line 1, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 81, line 13)

In column 51, line 4, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 81, line 15)

In column 51, line 13, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 81, line 22)

In column 51, line 14, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 81, line 22)

In column 51, line 15, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 81, line 23)

In column 51, lines 15-16, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 81, line 23)

In column 51, line 18, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 81, line 25)

In column 51, line 22, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 81, line 28)

In column 51, line 23, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 81, line 29)

In column 51, line 30, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 82, line 3)

In column 51, line 32, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 82, line 4)

In column 51, line 36, delete "Quantification" and insert - - Quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 82, line 7)

In column 51, line 38, delete "Quantification" and insert - - Quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 82, line 9)

In column 51, line 41, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 82, line 11)

In column 51, line 43, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 82, line 12)

In column 51, line 56, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 82, line 22)

In column 51, line 56, delete "pipeline" and insert - - pipelined - -, therefor.

(Specification filed on Nov. 25, 2003, page 82, line 22)

In column 51, line 58, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 82, line 23)

In column 51, line 59, delete "pipeline" and insert - - pipelined - -, therefor.

(Specification filed on Nov. 25, 2003, page 82, line 24)

In column 52, line 1, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 82, line 30)

In column 52, line 3, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 83, line 1)

In column 52, line 5, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 83, line 3)

In column 52, line 10, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 83, line 6)

In column 52, line 14, delete "quantification" and insert - - quantization - -, therefor.

(Specification filed on Nov. 25, 2003, page 83, line 9)

In column 53, line 35, delete "MC" and insert - - DC - -, therefor.

(Specification filed on Nov. 25, 2003, page 85, line 14)

In column 54, line 25, delete "pipeline" and insert - - pipelined - -, therefor.  
(Specification filed on Nov. 25, 2003, page 86, line 25)

In column 54, line 28, delete "pipeline" and insert - - pipelined - -, therefor.  
(Specification filed on Nov. 25, 2003, page 86, line 28, before "stage.")

In column 54, line 29, delete "pipeline" and insert - - pipelined - -, therefor.  
(Specification filed on Nov. 25, 2003, page 86, line 28, before "divider")

In column 54, line 31, delete "pipeline" and insert - - pipelined - -, therefor.  
(Specification filed on Nov. 25, 2003, page 86, line 30)

In column 54, line 53, delete "quantification" and insert - - quantization - -,  
therefor.  
(Specification filed on Nov. 25, 2003, page 87, line 16)

In column 54, line 58, delete "quantification" and insert - - quantization - -,  
therefor.  
(Specification filed on Nov. 25, 2003, page 87, line 19)

In column 55, line 21, delete "pipeline" and insert - - pipelined - -, therefor.  
(Specification filed on Nov. 25, 2003, page 88, line 10)

In column 55, line 29, delete "quantification" and insert - - quantization - -,  
therefor.  
(Specification filed on Nov. 25, 2003, page 88, line 16)

In column 55, line 53, delete "Quantification" and insert - - Quantization - -,  
therefor.  
(Specification filed on Nov. 25, 2003, page 89, line 4)

In column 55, line 57, delete "quantification" and insert - - quantization - -,  
therefor.  
(Specification filed on Nov. 25, 2003, page 89, line 8)

In column 59, line 37, delete "'001111s'." and insert - - "00111s". - -, therefor.  
(Specification filed on Nov. 25, 2003, page 95, line 5)

In column 60, lines 11-12, delete "0101001111" and insert - - 01010 001111 - -,  
therefor.  
(Specification filed on Nov. 25, 2003, page 96, line 4)

In column 64, line 51, delete "Y<Be>" and insert - - Y<B3> - -, therefor.  
(Specification filed on Nov. 25, 2003, page 103, line 14)

In column 65, line 19, delete "Y<Be>" and insert - - Y<B3> - -, therefor.  
(Specification filed on Nov. 25, 2003, page 104, line 8)

In column 66, line 49, delete "PCIM" and insert - - PCI<sup>TM</sup> - -, therefor.  
(Specification filed on Nov. 25, 2003, page 106, line 16)

In column 66, line 55, delete "PCIM" and insert - - PCI<sup>TM</sup> - -, therefor.  
(Specification filed on Nov. 25, 2003, page 106, line 21)

In column 67, line 4, delete "PCITM" and insert - - PCI<sup>TM</sup> - -, therefor.  
(Specification filed on Nov. 25, 2003, page 107, line 1)

In column 67, line 11, delete "PCIM" and insert - - PCI<sup>TM</sup> - -, therefor.  
(Specification filed on Nov. 25, 2003, page 107, line 6)

In column 67, line 42, delete "PCIM" and insert - - PCI<sup>TM</sup> - -, therefor.  
(Specification filed on Nov. 25, 2003, page 107, line 29)

In column 68, line 8, delete "PCIM" and insert - - PCI<sup>TM</sup> - -, therefor.  
(Specification filed on Nov. 25, 2003, page 108, line 22)

In column 70, line 61, delete "quantification" and insert - - quantization - -,  
therefor.  
(Specification filed on Nov. 25, 2003, page 113, line 10)

In column 70, line 63, delete "quantification" and insert - - quantization - -,  
therefor.  
(Specification filed on Nov. 25, 2003, page 113, line 11)

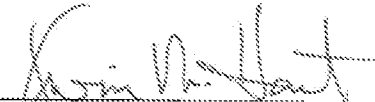
In column 70, line 65, delete "quantification" and insert - - quantization - -,  
therefor.  
(Specification filed on Nov. 25, 2003, page 113, line 13)

In column 71, line 23, delete "pipeline" and insert -- pipelined --, therefor.  
(Specification filed on Nov. 25, 2003, page 113, line 31)

The requested corrections are attached on Form PTO 1050.

Respectfully Submitted

10/2/09  
DATE

  
Name: Kevin M. Hart  
Registration No.: 36,823

Attorney/Agent of Record

HEWLETT-PACKARD COMPANY  
Intellectual Property Administration  
3404 E. Harmony Road  
Mail Stop 35  
Fort Collins, CO 80528

## UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

Page 1 of 15

PATENT NO. : 7,006,698

APPLICATION NO. : 10/721,947

ISSUE DATE : Feb. 28, 2006

INVENTOR(S) : Matthew James Adiletta, et al.

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

On the face page, in field (75), in "Inventors", in column 1, lines 1-8, delete "Matthew James Adiletta, Worcester, MA (US); King-Wai Chow, Marlboro, MA (US); Samuel Williams Ho, Marlborough, MA (US); Robert Clint Rose, Hudson, MA (US); William Ralph Wheeler, Southborough, MA (US); Subramania Iyer Sudharsanan, San Jose, CZ (US)" and insert - - King-Wai Chow, Marlborough, MA (US); Robert Clint Rose, Hudson, MA (US) - -, therefor.

On the face page, in field (60), under "Related U.S. Application Data", in column 1, line 4, delete "6,101,275" and insert - - 6,101,276 - -, therefor.

On the face page, in field (57), under "Abstract", in column 2, lines 1-14, delete "An apparatus and method for performing two-pass real time video compression is provided. Tactical decisions such as encoding and quantification values are determined in software, whereas functional execution steps are performed in hardware. By appropriately apportioning the tasks between software and hardware, the benefits of each type of processing are exploited, while minimizing both hardware complexity and data transfer requirements. One key concept that allows the compression unit to operate in real time is that the architecture and pipe lining both allow for B frames to be executed out of order. By buffering B frames, two-pass motion estimation techniques can be performed to tailor bit usage to the requirements of the frame, and therefore

### MAILING ADDRESS OF SENDER (Please do not use customer number below):

HEWLETT-PACKARD COMPANY  
Intellectual Property Administration  
3404 E. Harmony Road  
Mail Stop 35  
Fort Collins, CO 80528

This collection of information is required by 37 CFR 1.322, and 1.323, and 1.324. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C 122 and 37 CFR 1.14. This collection is estimated to take 1.0 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Attention Certificate of Corrections Branch, Commissioner for Patent, P.O. Box 1450, Alexandria, VA 22313-1450.

*If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.*

## UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

Page 2 of 15

PATENT NO. : 7,006,698

APPLICATION NO. : 10/721,947

ISSUE DATE : Feb. 28, 2006

INVENTOR(S) : Matthew James Adiletta, et al.

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

provide a more appealing output image.” and insert - - Method and apparatus for compressing video images are provided. A difference value from a current image and a prior image is calculated and compared against a variable adaptive threshold. If the calculated difference value is less than the variable adaptive threshold, the difference value is subtracted from the variable adaptive threshold to produce a new variable adaptive threshold level, and the video signal is deleted. Otherwise the variable adaptive threshold is reset to a predetermined beginning value, and the video signal is sent to an encoding and transmitting module. - -, therefor.

In column 1, line 25, delete “VWR,” and insert - - VCR, - -, therefor.

In column 2, line 22, delete “(DC),” and insert - - (MC), - -, therefor.

In column 2, line 24, delete “(DUCT)” and insert - - (DCT) - -, therefor.

In column 2, line 42, delete “BC2,” and insert - - B2, - -, therefor.

In column 2, line 64, delete “BC2” and insert - - B2 - -, therefor.

In column 3, line 51, delete “pipeline” and insert - - pipelined - -, therefor.

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## UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

Page 3 of 15

PATENT NO. : 7,006,698  
APPLICATION NO. : 10/721,947  
ISSUE DATE : Feb. 28, 2006  
INVENTOR(S) : Matthew James Adiletta, et al.

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In column 4, line 47, delete "quantification" and insert - - quantization - -, therefor.

In column 5, line 2, delete "VCD" and insert - - VCDU - -, therefor.

In column 5, line 28, delete "DUCT" and insert - - DCT - -, therefor.

In column 5, line 36, delete "quantification" and insert - - quantization - -, therefor.

In column 5, line 38, delete "quantification" and insert - - quantization - -, therefor.

In column 7, line 44, delete "P4 B3" and insert - - P4 B5 - -, therefor.

In column 13, line 35, delete "MC" and insert - - DC - -, therefor.

In column 13, line 37, delete "MC" and insert - - DC - -, therefor.

In column 13, line 43, delete "Intra\_MC" and insert - - Intra\_DC - -, therefor.

In column 13, line 61, delete "MC" and insert - - DC - -, therefor.

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## UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

Page 4 of 15

PATENT NO. : 7,006,698

APPLICATION NO. : 10/721,947

ISSUE DATE : Feb. 28, 2006

INVENTOR(S) : Matthew James Adiletta, et al.

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In column 14, line 12, delete "MC" and insert - - DC - -, therefor.

In column 14, line 13, delete "MC" and insert - - DC - -, therefor.

In column 14, line 43, delete "MC" and insert - - DC - -, therefor.

In column 16, line 49, delete "quantification" and insert - - quantization - -, therefor.

In column 16, line 51, delete "quantification" and insert - - quantization - -, therefor.

In column 16, line 52, delete "DUCT" and insert - - DCT - -, therefor.

In column 16, line 53, delete "DUCT" and insert - - DCT - -, therefor.

In column 20, line 16, delete "S" and insert - -  $S_1$  - -, therefor.

In column 22, line 33, in equation 7, delete " $d = |v_y(i) - v_y(0)| + |v_x(i) - v_x(0)|$ ", and insert - -  $d = |v_y(i) - v_y(0)| + |v_x(i) - v_x(0)|$  - -, therefor.

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## UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

Page 5 of 15

PATENT NO. : 7,006,698  
APPLICATION NO. : 10/721,947  
ISSUE DATE : Feb. 28, 2006  
INVENTOR(S) : Matthew James Adiletta, et al.

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In column 23, line 47, delete "quantification" and insert - - quantization - -, therefor.

In column 23, lines 49-50, delete "quantification" and insert - - quantization - -, therefor.

In column 23, line 62, delete "quantification" and insert - - quantization - -, therefor.

In column 24, line 3, delete "quantification" and insert - - quantization - -, therefor.

In column 24, line 4, delete "quantification" and insert - - quantization - -, therefor.

In column 24, line 10, delete "quantification" and insert - - quantization - -, therefor.

In column 24, line 30, delete "quantification" and insert - - quantization - -, therefor.

In column 24, lines 32-33, delete "quantification" and insert - - quantization - -, therefor.

In column 24, line 36, delete "quantification" and insert - - quantization - -, therefor.

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## UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

Page 6 of 15

PATENT NO. : 7,006,698  
APPLICATION NO. : 10/721,947  
ISSUE DATE : Feb. 28, 2006  
INVENTOR(S) : Matthew James Adiletta, et al.

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In column 24, line 37, delete "quantification" and insert - - quantization - -, therefor.

In column 24, line 48, delete "quantification" and insert - - quantization - -, therefor.

In column 24, line 49, delete "quantification" and insert - - quantization - -, therefor.

In column 24, line 63, delete "quantification" and insert - - quantization - -, therefor.

In column 24, line 65, delete "quantification" and insert - - quantization - -, therefor.

In column 25, line 4, delete "quantification" and insert - - quantization - -, therefor.

In column 25, line 17, delete "quantification" and insert - - quantization - -, therefor.

In column 25, line 24, delete "quantification" and insert - - quantization - -, therefor.

In column 25, line 27, delete "quantification" and insert - - quantization - -, therefor.

In column 25, lines 59-60, delete "quantification" and insert - - quantization - -, therefor.

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## UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

Page 7 of 15

PATENT NO. : 7,006,698

APPLICATION NO. : 10/721,947

ISSUE DATE : Feb. 28, 2006

INVENTOR(S) : Matthew James Adiletta, et al.

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In column 25, lines 62-63, delete "quantification" and insert - - quantization - -, therefor.

In column 26, line 2, delete "quantification" and insert - - quantization - -, therefor.

In column 26, line 31, delete "quantification" and insert - - quantization - -, therefor.

In column 26, lines 45-46, delete "quantification" and insert - - quantization - -, therefor.

In column 26, line 53, delete "quantification" and insert - - quantization - -, therefor.

In column 26, line 60, delete "quantification" and insert - - quantization - -, therefor.

In column 26, line 63, delete "quantification" and insert - - quantization - -, therefor.

In column 27, line 39, in equation 9A, delete " $2(y+1)uI$ " and insert - -  $2(y+1)vII$  - -, therefor.

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## UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

Page 8 of 15

PATENT NO. : 7,006,698

APPLICATION NO. : 10/721,947

ISSUE DATE : Feb. 28, 2006

INVENTOR(S) : Matthew James Adiletta, et al.

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In column 27, line 45, in equation 9B, delete "2(v+1)vII" and insert - - 2(y+1)vII - -, therefor.

In column 27, line 52, delete "IMCT" and insert - - IDCT - -, therefor.

In column 27, line 62, delete "MC" and insert - - DC - -, therefor.

In column 27, line 64, delete "quantification" and insert - - quantization - -, therefor.

In column 27, line 64, delete "Quantification" and insert - - Quantization - -, therefor.

In column 28, line 3, delete "Quantification" and insert - - Quantization - -, therefor.

In column 28, line 19, delete "quantification" and insert - - quantization - -, therefor.

In column 28, line 46, delete "quantification" and insert - - quantization - -, therefor.

In column 29, line 12, delete "quantification" and insert - - quantization - -, therefor.

In column 38, line 46, delete "quantification" and insert - - quantization - -, therefor.

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## UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

Page 9 of 15

PATENT NO. : 7,006,698  
APPLICATION NO. : 10/721,947  
ISSUE DATE : Feb. 28, 2006  
INVENTOR(S) : Matthew James Adiletta, et al.

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In column 38, line 51, delete "IMCT" and insert - - IDCT - -, therefor.

In column 38, line 52, delete "Quantification" and insert - - Quantization - -, therefor.

In column 38, line 64, delete "quantification" and insert - - quantization - -, therefor.

In column 39, line 8, delete "pipeline" and insert - - pipelined - -, therefor.

In column 39, line 21, delete "pipeline" and insert - - pipelined - -, therefor.

In column 39, line 64, delete "Pa." and insert - - P4. - -, therefor.

In column 43, line 32, delete "T11," and insert - - T10, - -, therefor.

In column 44, line 29, delete "quantification" and insert - - quantization - -, therefor.

In column 45, line 16, delete "Quantification" and insert - - Quantization - -, therefor.

In column 45, line 20, delete "MCT" and insert - - DCT - -, therefor.

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## UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

Page 10 of 15

PATENT NO. : 7,006,698  
APPLICATION NO. : 10/721,947  
ISSUE DATE : Feb. 28, 2006  
INVENTOR(S) : Matthew James Adiletta, et al.

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In column 45, line 26, delete "MCT" and insert - - DCT - -, therefor.

In column 45, line 28, delete "Quantification" and insert - - Quantization - -, therefor.

In column 45, line 29, delete "Quantification" and insert - - Quantization - -, therefor.

In column 47, line 35, delete "quantification" and insert - - quantization - -, therefor.

In column 47, line 37, delete "quantification" and insert - - quantization - -, therefor.

In column 50, lines 61-62, delete "Quantification" and insert - - Quantization - -, therefor.

In column 50, line 64, delete "quantification" and insert - - quantization - -, therefor.

In column 50, line 65, delete "quantification" and insert - - quantization - -, therefor.

In column 50, line 65, delete "Quantification" and insert - - Quantization - -, therefor.

In column 51, line 1, delete "quantification" and insert - - quantization - -, therefor.

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## UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

Page 11 of 15

PATENT NO. : 7,006,698  
APPLICATION NO. : 10/721,947  
ISSUE DATE : Feb. 28, 2006  
INVENTOR(S) : Matthew James Adiletta, et al.

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In column 51, line 4, delete "quantification" and insert - - quantization - -, therefor.

In column 51, line 13, delete "quantification" and insert - - quantization - -, therefor.

In column 51, line 14, delete "quantification" and insert - - quantization - -, therefor.

In column 51, line 15, delete "quantification" and insert - - quantization - -, therefor.

In column 51, lines 15-16, delete "quantification" and insert - - quantization - -, therefor.

In column 51, line 18, delete "quantification" and insert - - quantization - -, therefor.

In column 51, line 22, delete "quantification" and insert - - quantization - -, therefor.

In column 51, line 23, delete "quantification" and insert - - quantization - -, therefor.

In column 51, line 30, delete "quantification" and insert - - quantization - -, therefor.

In column 51, line 32, delete "quantification" and insert - - quantization - -, therefor.

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## UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

Page 12 of 15

PATENT NO. : 7,006,698  
APPLICATION NO. : 10/721,947  
ISSUE DATE : Feb. 28, 2006  
INVENTOR(S) : Matthew James Adiletta, et al.

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In column 51, line 36, delete "Quantification" and insert - - Quantization - -, therefor.

In column 51, line 38, delete "Quantification" and insert - - Quantization - -, therefor.

In column 51, line 41, delete "quantification" and insert - - quantization - -, therefor.

In column 51, line 43, delete "quantification" and insert - - quantization - -, therefor.

In column 51, line 56, delete "quantification" and insert - - quantization - -, therefor.

In column 51, line 56, delete "pipeline" and insert - - pipelined - -, therefor.

In column 51, line 58, delete "quantification" and insert - - quantization - -, therefor.

In column 51, line 59, delete "pipeline" and insert - - pipelined - -, therefor.

In column 52, line 1, delete "quantification" and insert - - quantization - -, therefor.

In column 52, line 3, delete "quantification" and insert - - quantization - -, therefor.

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## UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

Page 13 of 15

PATENT NO. : 7,006,698  
APPLICATION NO. : 10/721,947  
ISSUE DATE : Feb. 28, 2006  
INVENTOR(S) : Matthew James Adiletta, et al.

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In column 52, line 5, delete "quantification" and insert - - quantization - -, therefor.  
In column 52, line 10, delete "quantification" and insert - - quantization - -, therefor.  
In column 52, line 14, delete "quantification" and insert - - quantization - -, therefor.  
In column 53, line 35, delete "MC" and insert - - DC - -, therefor.  
In column 54, line 25, delete "pipeline" and insert - - pipelined - -, therefor.  
In column 54, line 28, delete "pipeline" and insert - - pipelined - -, therefor.  
In column 54, line 29, delete "pipeline" and insert - - pipelined - -, therefor.  
In column 54, line 31, delete "pipeline" and insert - - pipelined - -, therefor.  
In column 54, line 53, delete "quantification" and insert - - quantization - -, therefor.  
In column 54, line 58, delete "quantification" and insert - - quantization - -, therefor.

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## UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

Page 14 of 15

PATENT NO. : 7,006,698  
APPLICATION NO. : 10/721,947  
ISSUE DATE : Feb. 28, 2006  
INVENTOR(S) : Matthew James Adiletta, et al.

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In column 55, line 21, delete "pipeline" and insert - - pipelined - -, therefor.

In column 55, line 29, delete "quantification" and insert - - quantization - -, therefor.

In column 55, line 53, delete "Quantification" and insert - - Quantization - -, therefor.

In column 55, line 57, delete "quantification" and insert - - quantization - -, therefor.

In column 59, line 37, delete ""001111s"." and insert - - "00111s". - -, therefor.

In column 60, lines 11-12, delete "0101001111" and insert - - 01010 001111 - -, therefor.

In column 64, line 51, delete "Y<Be>" and insert - - Y<B3> - -, therefor.

In column 65, line 19, delete "Y<Be>" and insert - - Y<B3> - -, therefor.

In column 66, line 49, delete "PCIM" and insert - - PCI<sup>TM</sup> - -, therefor.

In column 66, line 55, delete "PCIM" and insert - - PCI<sup>TM</sup> - -, therefor.

### MAILING ADDRESS OF SENDER (Please do not use customer number below):

HEWLETT-PACKARD COMPANY  
Intellectual Property Administration  
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Fort Collins, CO 80528

This collection of information is required by 37 CFR 1.322, and 1.323, and 1.324. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C 122 and 37 CFR 1.14. This collection is estimated to take 1.0 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Attention Certificate of Corrections Branch, Commissioner for Patent, P.O. Box 1450, Alexandria, VA 22313-1450.

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## UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

Page 15 of 15

PATENT NO. : 7,006,698  
APPLICATION NO. : 10/721,947  
ISSUE DATE : Feb. 28, 2006  
INVENTOR(S) : Matthew James Adiletta, et al.

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In column 67, line 4, delete "PCITM" and insert - - PCI<sup>TM</sup> - -, therefor.

In column 67, line 11, delete "PCIM" and insert - - PCI<sup>TM</sup> - -, therefor.

In column 67, line 42, delete "PCIM" and insert - - PCI<sup>TM</sup> - -, therefor.

In column 68, line 8, delete "PCIM" and insert - - PCI<sup>TM</sup> - -, therefor.

In column 70, line 61, delete "quantification" and insert - - quantization - -, therefor.

In column 70, line 63, delete "quantification" and insert - - quantization - -, therefor.

In column 70, line 65, delete "quantification" and insert - - quantization - -, therefor.

In column 71, line 23, delete "pipeline" and insert - - pipelined - -, therefor.

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